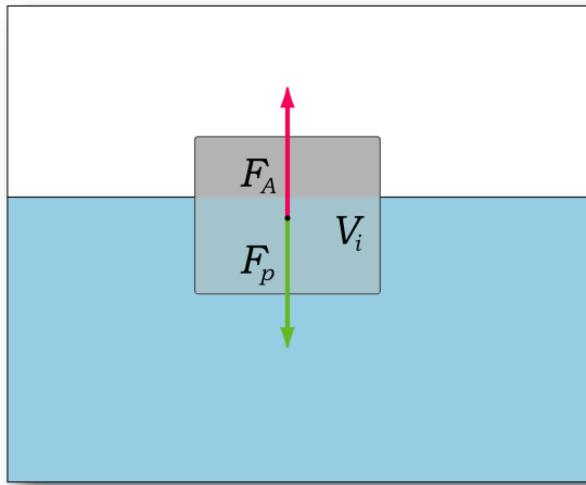


**Task:**

A piece of metal of density  $7.8 \cdot 10^3 \frac{kg}{m^3}$  weight  $20 N$  in air. Calculate the apparent weight of the metal when completely immersed in a liquid of  $8.3 \cdot 10^{-2} \frac{kg}{m^3}$  and  $g = 10 \frac{m}{s^2}$

**Solution:**

$$F_{net} = F_p - F_A = mg - \rho_{liquid}gV = \rho_{body}Vg - \rho_{liquid}gV = Vg(\rho_{body} - \rho_{liquid});$$

$$F_p = mg = \rho_{body}Vg = 20 N$$

$$Vg = \frac{F_p}{\rho_{body}}$$

$$F_{net} = Vg(\rho_{body} - \rho_{liquid}) = \frac{F_p}{\rho_{body}}(\rho_{body} - \rho_{liquid}) = F_p \frac{\rho_{body} - \rho_{liquid}}{\rho_{body}}$$

$$F_{net} = F_p \frac{\rho_{body} - \rho_{liquid}}{\rho_{body}} = 20 N \cdot \frac{7.8 \cdot 10^3 \frac{kg}{m^3} - 8.3 \cdot 10^{-5} \frac{kg}{m^3}}{7.8 \cdot 10^3 \frac{kg}{m^3}} \approx 20 N \cdot 1 = 20 N$$

**Answer:**

$$F_{net} \approx 20 N$$